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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,871	01/03/2002	Todd G. Culman	SJ09-2000-0178	4800

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EXAMINER	
PENDLETON, BRIAN T	
ART UNIT	**PAPER NUMBER**
2644	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/037,871	CULMAN ET AL.	
	Examiner	Art Unit	
	Brian T. Pendleton	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 20-22* is/are rejected.

7)☒ Claim(s) *15-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 4/21/05 have been fully considered but they are not persuasive. Applicant argues that Sampietro et al do not teach a transducer for accessing the storage medium wherein said transducer generates a waveform within said housing. It is the Examiners contention that any transducer generates a waveform. Sampietro discloses an actuator arm 30 that has a transducing head. The transducing head is positioned with respect to the disc 30 using a voice coil motor 22. By moving the transducer head to read data from the disc 30, the head inherently generates a sound waveform, albeit one of small amplitude. Thus, Sampietro teaches the limitation in question. Applicant also submitted that the 103 rejections do not render the claims obvious because allegedly the secondary references do not include the limitation of a transducer for accessing the storage medium wherein said transducer generates a waveform within said housing. However, that limitation is met by Sampietro. There are no other arguments to the appropriateness of the combination of references.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 6, 11, 12, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sampietro et al, US Patent 6,157,116. Sampietro discloses an active noise cancellation system in a disc drive comprising a housing 12, storage medium 16, spindle 17

(inherently having a motor drive), a transducer for accessing the storage medium attached to actuator arm assembly 20 and noise reduction means (piezoelectric devices) 24, 26, 28, and 30. Claims 1 and 21 are met. Per claim 2, column 1 discloses that noise is generated by the disc drive actuation system which are components within the housing. Regarding claim 3, controller 54 acts as a waveform generating means. Per claim 5, column 3 lines 56-60 discloses that the noise reducing waveform is out of phase with the acoustic noise. As to claim 6, the cancellation signal produced by controller 54 is opposite in phase, which is 180 degrees out of phase with the acoustic noise. As to claim 11, the noise reduction is based on spindle rotation which is a moving component in the housing 12. Per claim 12, column 3 lines 45-52 also discloses that the noise reducing waveform is based on monitoring the actuation system which inherently includes the actuator. As to claim 20, there is disclosed a housing 12, magnetic storage medium 16, an inherent motor drive, slider 20, actuator assembly 20, noise reduction means 24, 26, 28 and 30, and control unit 32.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 7, 8, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampietro in view of Eatwell. Sampietro does not disclose that the acoustic noise is in part generated external of the housing. Eatwell discloses a personal computer with active noise reduction and piezoelectric speakers. Figure 15 discloses the computer with active noise

reduction circuitry 107 and hard disc drive 110. Column 6 line 54 – column 7 line 8 discloses that the active noise reduction circuitry is used to quiet fan noise and hard disk drive noise. Thus, it was well known that acoustic noise is generated externally from a hard disk drive and needed to be cancelled. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to also reduce noise external from the hard disk drive 10 of Sampietro for the purpose of improving the sound quality of electronic device of which it is a part of. Regarding claim 7, Sampietro discloses a reference input signal generator 51 but does not disclose a transducing means for detecting the acoustic noise and the waveform generating means generating the noise reducing waveform based on the detected acoustic noise. Eatwell discloses the active noise reduction circuitry in figure 17. The circuitry comprises a microphone (transducer) 121 to detect the acoustic noise and filters 118-120 to generate a noise reducing waveform. It was well known, as evidenced by Eatwell, to detect noise with a microphone and use the microphone signal as a reference signal for generating a noise reducing signal. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention use the circuitry of Eatwell with a microphone, in the apparatus of Sampietro for the purpose of getting an accurate representation of the ambient noise that needed to be cancelled around the hard disc drive. As to claim 8, the circuitry in Eatwell discloses a filter. As to claim 22, Sampietro discloses a data storage device having a housing, storage medium, motor drive, transducer, actuator and noise reduction means for reducing acoustic noise. As stated above, it would have been obvious to cancel acoustic noise from a source external of the housing per the teachings of Eatwell. The combination of Sampietro and Eatwell do not teach a plurality of data storage devices in a support structure. However, there is no patentable weight associated with a plurality

of obvious apparatuses grouped together. It was well known at the time of invention to have a plurality of hard disc drives in computers, especially multi-media computers. Thus, each drive (data storage device) would create acoustic noise along with the other structures of the computer. It would have been beneficial to design an acoustic noise reduction system to cancel all the noise sources for the purpose of producing a quiet computing environment.

Claims 9, 10, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampietro in view of McLean, US Patent Publication 2001/0046300. Samprieto does not disclose the waveform generating means having stored noise reducing waveforms. McLean discloses an active noise control system comprising a sensors 30, 34, control unit 14 and memory 18. The memory 18 stores cancellation waveform data which is used by the control unit 14 to cancel engine noise. Paragraph 0009 relates that it was beneficial to store cancellation signals in memory to obviate the need to calculate them in real time. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to store noise reducing waveforms in the invention of Sampietro for the purpose of reducing processing calculations. As to claim 10, it was obvious to use any of the claimed memory structures for storage of the waveforms. One of ordinary skill in the art would have realized the benefits of each. Regarding claim 13, McLean discloses correlating cancellation waveform data with engine speed data. As applied to Sampietro, it would have been obvious to one of ordinary skill in the art to store cancellation waveforms matching with motor drive or actuator characteristics, as those are the main components of noise in a hard disc drive. Per claim 14, it was obvious to have a waveform generator which creates the noise reducing waveforms during offline operation of the hard disc drive (see paragraph 11).

Allowable Subject Matter

Claims 15-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (571) 272-7527. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian T. Pendleton
Examiner
Art Unit 2644

btp